

Tier 2 Modeling and MOBILE6



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Models Used for Tier 2



- Modified MOBILE5b Version 1 (T2AT)
 - Tier 2 Study

- Tier 2 Model
 - Tier 2 NPRM

- Modified MOBILE5b Version 2 (MM5b2)
 - Tier 2 FRM Ozone Modeling
 - Stakeholder Analysis of MOBILE6 Proposals

Model Generalities



- Speed = 24.6 mph (LA92)
- No temperature corrections, but A/C reflects higher temperatures
- One I/M program fits all

Modified M5b Version 1



- Developed in early 1998 for Tier 2 Study
- Incorporated early estimates of:
 - Basic Emission Rates (CALIMFAC)
 - Sulfur Effects
 - Off-Cycle and Air Conditioning Effects
 - Fleet Characteristics
 - LDT Growth
- MOBILE5 Input file format

Modified M5b V1, cont...



- Specific program scenarios (Fuel, IM, Region)
- Baseline only - no estimates of Tier 2 control
- Documentation:
 - Koupal and Rykowski, "Methodology for Modifying MOBILE5b in the Tier 2 Study", April 1998 (published with Tier 2 Study)

Tier 2 Model



- Developed late 1998 for Tier 2 NPRM
- Light-Duty NOx, Exhaust HC, PM, SOx
- Used proposed MOBILE6 approach as is for:
 - Basic Emission Rates (deterioration)
 - Tier 1 and Later OBD/IM Effects
 - Sulfur Effects
 - Fleet Characteristics
 - LDT Growth
- Used approximate MOBILE6 approach for:
 - Pre-Tier 1 IM Effects
 - Off-Cycle and Air Conditioning

Tier 2 Model, cont...



- Microsoft Excel Spreadsheet
- Estimates total light-duty inventory
- Baseline and control scenarios
- Specific regions:
 - 47-State (U.S. minus CA, AK, HA)
 - Urban Areas (New York, Atlanta, Chicago, Charlotte)
 - OTAG
- Documentation:
 - Koupal, "Development of Light-Duty Emission Inventory Estimates in the Notice of Proposed Rulemaking for Tier 2 and Sulfur Standards", March 1999

Modified M5b Version 2



- Yet to be released
- NOx, Exhaust HC, some Evap HC elements
- MOBILE5b input file format
- Light-Duty elements generally identical to Tier 2 Model, except:
 - No tampering effects
 - No pre-1981 off-cycle effects
 - Diesel emission rates
 - Evap OBD estimated through pressure/purge test

MM5b2, Cont...



■ Also Includes:

- Proposed MOBILE6 Heavy-Duty Emission Rates
- Approximation of HD Diesel NOx Excess
- Proposed MOBILE6 fleet characteristics for all classes

■ Scenarios:

- Baseline and Proposed Tier 2/Sulfur
- No IM and IM
 - Tier 0: Phase-In Cutpoint IM240, Final Cutpoint IM240
 - Tier 1: OBD-based I/M Check
- RFG and Conventional Gasoline

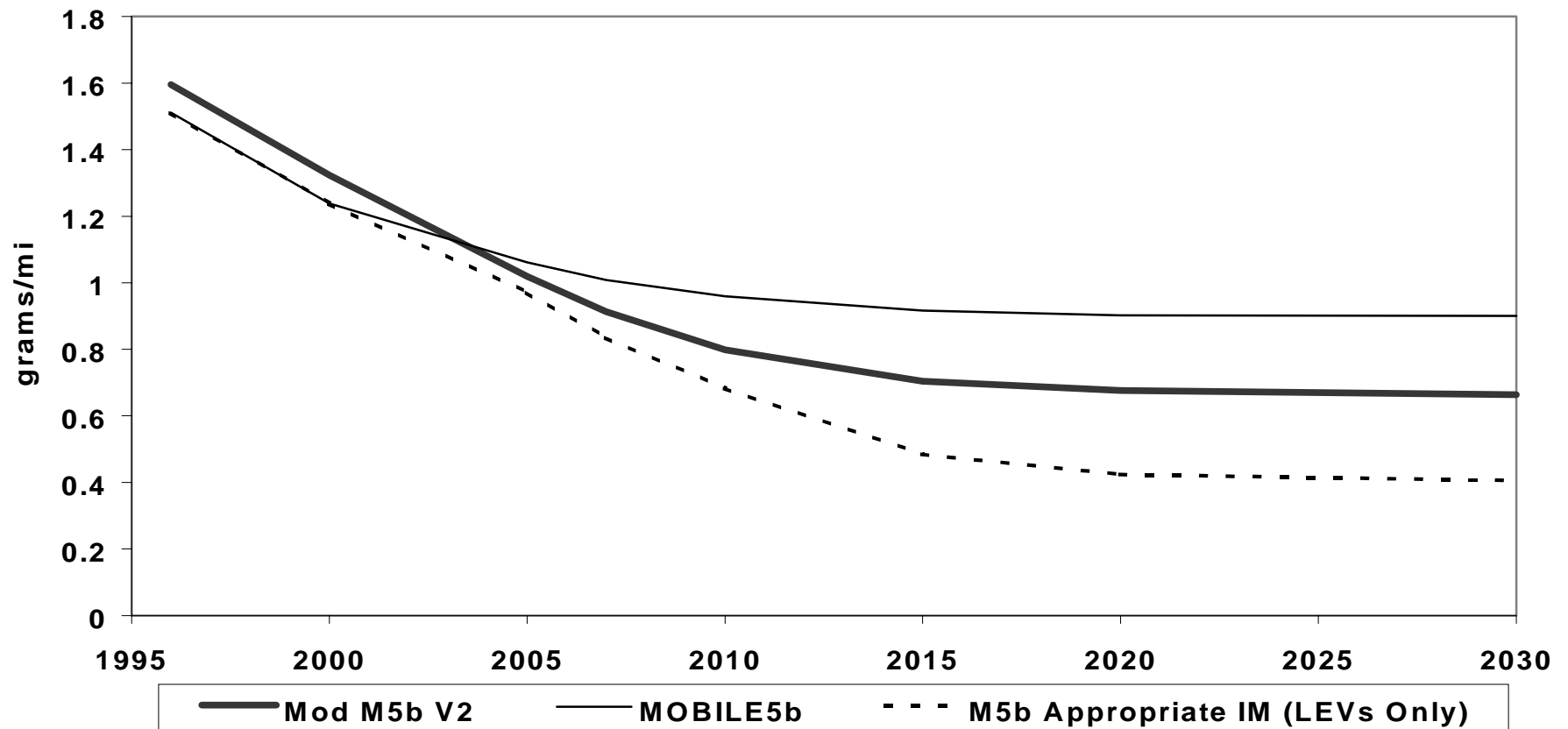
MM5b2 vs. MOBILE5b



- Comparison shown for composite light-duty gasoline emission factors (LDV, LDT1-LDT4)
- NOx and Exhaust HC
- IM program:
 - Phase-In Cutpoint IM240 for pre-Tier 1
 - MM5b2: OBD-based I/M Check for Tier 1 and later
 - MOBILE5b:
 - Final Cutpoint IM240 for Tier 1 and later
 - Final Cutpoint IM240 for Tier 1, "Appropriate I/M" for LEVs
- RFG

MM5b2 vs. MOBILE5b: NOx

Light-Duty Gasoline NOx Emission Factor
IM RFG - No Tier 2



MM5b2 vs. MOBILE5b: Exhaust HC

Light-Duty Gasoline Exhaust HC Emission Factor
IM RFG - No Tier 2

